

tubular portion of the vagina has two coats of muscles, the inner longitudinal and the outer circular. The coils of the ovaries are confined to the posterior region of the body. The greater part of the uterine branches is filled with immense numbers of embryos, which measure about 0.275 mm. in length, have blunt squarish heads, and tapering, slightly hooked tails, and are apparently without a sheath.

A microfilaria has been recorded by Evans and Rennie from the blood of the Indian elephant, and it may be that it is the embryo of a form closely related to that here described from the African elephant. In view of the known relationships between other parasites of the two elephants, however, it is unlikely to be the same species.

It has been mentioned above that *Amira sameera*, Khalil, occurred in the same collection as the *Filaria*. This form has hitherto been known only from a single male in the British Museum, from an elephant from the Addo Bush, Cape Province. The present material consists of three females, in rather poor condition, which, from their general characters, appear probably to belong to the same species.

XIX.—*An Ascarid from the Sperm-whale.*

By H. A. BAYLIS, M.A., D.Sc.

(Published by permission of the Trustees of the British Museum.)

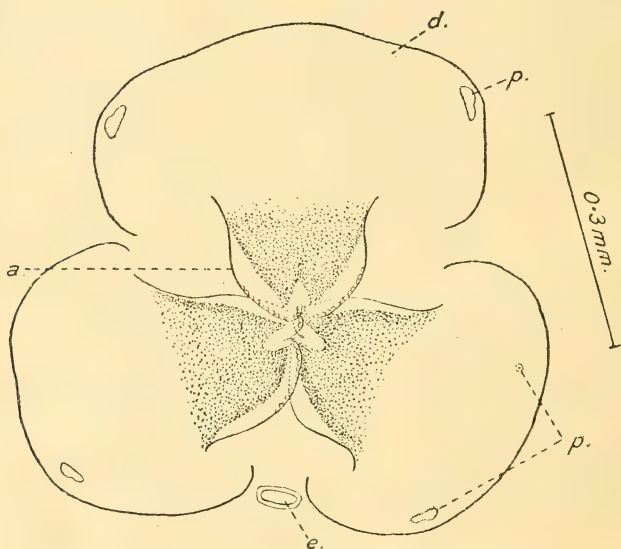
THE British Museum (Natural History) recently received, through the kindness of Mr. E. B. Binnie, Stipendiary Magistrate, South Georgia, several specimens of an *Ascarid* from the stomach of a sperm-whale (*Physeter catodon*). The worms prove to belong to the genus *Anisakis*, Dujardin, 1845, and represent a species hitherto undescribed.

Anisakis physeteris, sp. n.

This is a fairly large, stout form. The males measure 70–90 mm. in length and about 3 mm. in thickness; the females 80–112 mm. and 4–4.5 mm. respectively. The cuticle has extremely fine transverse striations, the interval between them being only about 2 μ . The regular, broad cuticular bands, with prominent posterior edges, characteristic of some species of this genus, are here absent, but there are, in addition to the fine striations, some irregular transverse wrinkles. The lips are relatively small, and the neck,

in most specimens, widens suddenly behind their bases. The narrow anterior lobes of the lips (fig. 1, *a.*) are sharply notched on their inner surfaces, that of the dorsal lip being thus divided into two equal portions. The notch of each ventro-lateral lip, however, divides the lobe asymmetrically, the portion ventral to the notch being larger than the latero-dorsal portion. The anterior lobe of each lip carries a denticerous ridge with very coarse, rather irregular teeth. The basal portion of each lip bears two papillæ. Those of the dorsal lip are lozenge-shaped, double papillæ, while each

Fig. 1.



Anisakis physeteris, female. The lips, viewed *en face*.

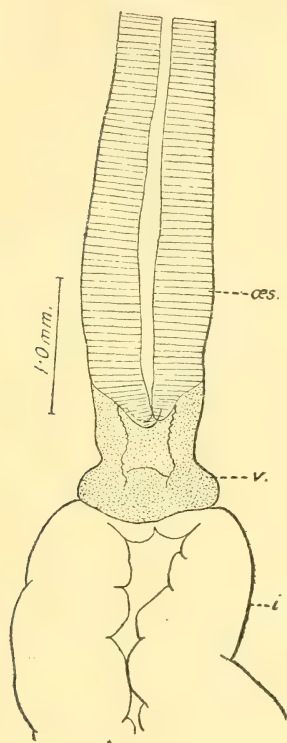
a., anterior lobe, and *d.*, basal portion, of dorsal lip; *e.*, excretory pore; *p.*, *p.*, papillæ.

ventro-lateral lip has one papilla of this type towards its ventral side and one very minute, simple papilla situated more laterally and further forward. There is a pair of cervical papillæ, situated at a distance of about 1 mm. from the anterior end.

The muscular portion of the œsophagus measures about 6 mm. in length in the male and 7 mm. in the female. It has a maximum thickness of a little over 1 mm. There is a very short ventriculus or glandular portion of the œsophagus

(fig. 2, *v.*), separated by valves from the muscular portion. It is without the sigmoid curve common in allied species, and is thickest near its posterior end. Here it measures up to 1.1 mm. in diameter, while the length of the organ is only 1 mm. The intestine is much wider at its commencement

Fig. 2.



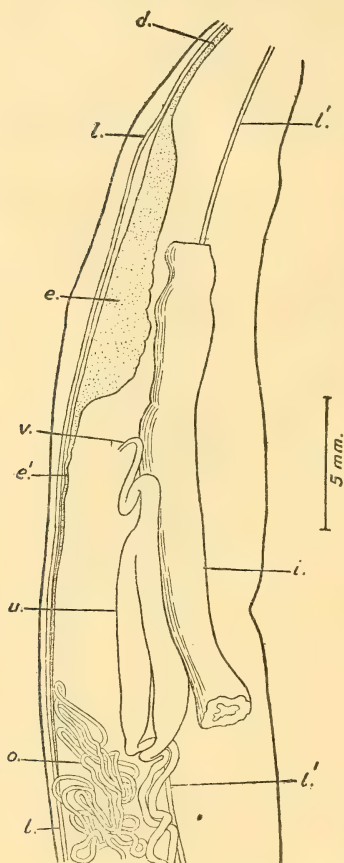
Anisakis physeteris, female. Posterior portion of oesophagus and anterior portion of intestine.

i., intestine; *oes.*, oesophagus; *v.*, ventriculus.

than the ventriculus. The excretory pore (fig. 1, *e.*) is situated, as usual in the genus, between the bases of the ventro-lateral lips. The excretory organ is of the type usual in this group of *Ascaridæ*. The terminal duct, which opens at the pore, widens out posteriorly into a flat gland (fig. 3, *e.*) which runs along the ventral side of the left lateral field.

The expanded portion of this gland, in a female 88 mm. long, measures about 11 mm. in length and 2 mm. in width

Fig. 3.



Anisakis physeteris. Portion of a dissection of a female specimen. A longitudinal incision has been made just dorsally to the left lateral field and the body-wall spread out.

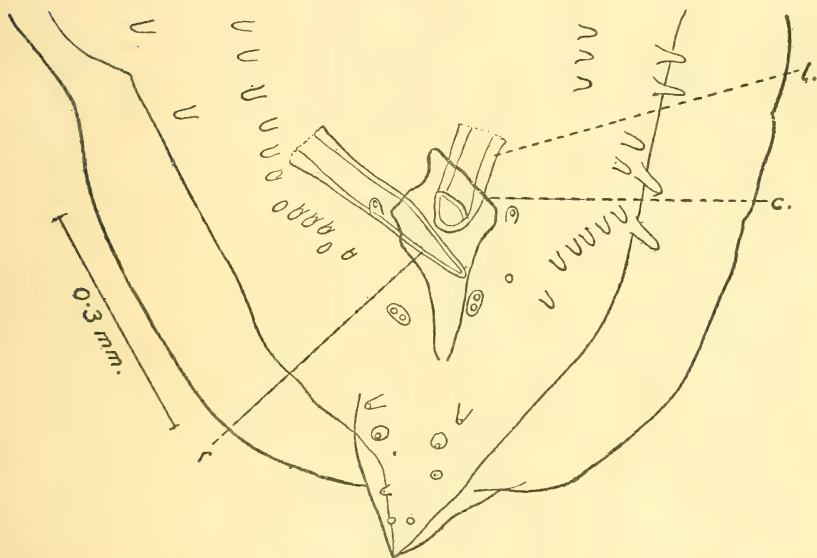
d., excretory duct; *e.*, excretory organ; *e'*, its narrow posterior portion; *i.*, portion of intestine (with both ends cut); *l.*, *l.*, left, and *l'*, *l'*, right lateral field; *o.*, coils of ovarian tubes; *u.*, uterus; *v.*, vagina.

at its widest (posterior) part. Posteriorly it diminishes to a very narrow strip (fig. 3, *e'*), and this can be traced back

to about the level of the posterior end of the uterine branches (see fig. 3). The length of the entire organ is rather more than one-third of the total length of the body.

The tail of the male measures about 0.45 mm. in length and tapers rapidly to a conical point. The cuticle near the caudal end is slightly expanded and dorso-ventrally flattened at the sides. The cloaca opens into a deep longitudinal depression in the cuticle (fig. 4, *c.*). The spicules are unequal in length, but both very short. The right spicule measures 0.35 mm. and is straight; the left measures 0.4 mm. and is

Fig. 4.



Anisakis physeteris. Caudal end of male; ventral view.

c., edge of cloacal depression; *l.*, left, and *r.*, right spicule.

slightly curved. The caudal papillæ (fig. 4) are irregularly arranged, and there is no clear distinction between the post-anal and preanal series. Near the extremity of the tail there are four pairs arranged in a fairly regular series. In front of these, and separated from the most anterior of them by a considerable space, there is a pair of double papillæ situated on the folds of cuticle forming the lateral walls of the cloacal depression. Anteriorly to these, at the level of the widest part of the cloacal depression, is a pair of simple papillæ.

Species.	Length (in mm.).	Thickness (in mm.).	Interval be- tween cuticular striations (in μ).	Length of œsophagus (in mm.).	Form and size (in mm.) of ventriculus.	Length of spicules (in mm.).	Position of vulva.	Diameter of eggs (in μ).
<i>dussumieri</i> , van Ben., 1870.	♂ 79 ♀ 70-100	♂ 2.2 ♀ 2-2.5	20-30	5-5.5	Sigmoid, longer than broad. 1.5 × 0.4	[L. ?] 2.7 [R. ?] 1.5	In anterior half of body, 25- 40 mm. from ant. end.	41-43
<i>simplex</i> (Rud., 1809). [nec Duj.]	♂ 37-130 ♀ 79-200	♂ 0.9-2.5 ♀ 2.2-2.75	23		Thickest anteriorly.	1.68	Divides body in proportion of 3:4 (v. <i>Linstow</i>) or 36:72, { (<i>Jägers-</i> 70:150 { <i>kiöld</i>).	52
<i>insignis</i> (Dies., 1851).	[♂ 50-90] [♀ 100-140]	[♂ ca. 1] [♀ ca. 1.6-2]						
<i>typica</i> (Dies., 1860).	♂ 31-70 ♀ 37-90	♂ 1-1.5 ♀ 1.5-2	32	4	Usually sigmoid, longer than broad. 1.25 × 0.25	L. 3 R. 0.96	Near middle of body.	40-56
<i>kukenthalii</i> (Cobb, 1888).	♂ 70-90 ♀ 80-100	♂ 2-3 ♀ 2.5	30	5	Usually sigmoid. 2-2.5 long.	L. 2.3 R. 1.7	A little in front of middle.	
<i>physeteris</i> , sp. n.	♂ 70-90 ♀ 80-112	♂ 3 ♀ 4-4.5	2	6-7	Straight, broader than long. 1 × 1.1	L. 0.4 R. 0.35	Divides body in proportion of 2:7.	60

All these papillæ are subventral in position. A row of more laterally-placed papillæ begins on either side at about halfway between the two most anterior subventral papillæ. This row runs at first diagonally towards the sides of the body, and then is continued anteriorly as an extremely scattered pre-anal series, with a tendency to resolve itself into two rows. This series extends forward for a distance of some 5 mm. from the cloacal aperture.

The tail of the female measures about 0.7 mm. in length and is bluntly conical, with a small terminal button, sometimes sunk in a depression. The vulva is situated at about 19 mm. from the anterior end in a specimen 88 mm. long. It thus divides the body roughly in the proportion of 2:7. The vagina, together with the unpaired portion of the uterus (fig. 3, v.), forms a continuous tube increasing rapidly in diameter as it passes backwards. After forming two or three sinuous bends it gives origin, at a distance of about 5 mm. behind the vulva, to two stout uterine branches (fig. 3, u.), which are remarkably short (8 mm.). These diminish suddenly in width behind, and pass into the ovarian tubes, which pursue a tortuous course covering a further distance of about 13 mm., and then bend forward. They continue in a forward direction to a point slightly in front of the posterior end of the uterine branches, thence running posteriorly again, still with numerous loops disposed more or less transversely to the axis of the body, and terminating at about 20 mm. from the posterior end. The eggs are spherical, and have thick shells with a diameter of 0.06 mm. Their contents are unsegmented when ready for laying.

It may be useful to add a table (p. 216) comparing certain characters of this species with those of other members of the genus occurring in Cetacea.

The data used in this table have been taken mainly from Stiles and Hassall's valuable account of the *Ascaridæ* of marine mammals in 'Report of Fur-seal Investigations,' part iii. (Washington, 1899). The measurements of *A. insignis* have been calculated from those given by Diesing, which are in inches and lines. It will be noted that *A. physteris* differs markedly from all the other species of which sufficient data are available, notably in the extreme shortness of the spicules, the form of the ventriculus, the size of the eggs, the stout build of the body and the fineness of the cuticular striations.